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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/635,652	08/07/2003	Keizo Ohta	723-1414	8790

27562 7590 06/20/2006

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EXAMINER

KIM, ANDREW

ART UNIT	PAPER NUMBER
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3712

DATE MAILED: 06/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/635,652	Applicant(s) OHTA, KEIZO	
	Examiner Andrew Kim	Art Unit 3712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/5/03</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by
Matsumoto (US 5,043,922).

Claims 1, 6 and 7: Matsumoto discloses A computer-readable storage medium for storing a shadow volume generation program that causes a computer to generate a shadow volume used for rendering a shadow cast by an object placed in a three-dimensional virtual space, wherein the shadow volume generation program causes the computer to execute the steps of:

- writing a Z value corresponding to each pixel within a predetermined area including at least the shadow casting object, into a Z-buffer, using a light source placed in the virtual space as a viewpoint (col. 6, lines 25-39); and
- generating the shadow volume from a plane object by determining a position of each vertex of a plurality of polygons composing the plane object, with regard to a direction perpendicular to a surface of the plane object in accordance with the Z value of each pixel written in the Z-buffer (col. 7, lines 26-35).

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2. A storage medium according to claim 1, wherein

- a shape of the plane object is defined by a plurality of vertices, each having different combination of an X-coordinate and a Z-coordinate (col. 7, lines 26-56), and
- in the shadow volume generation step, a Y-coordinate of each vertex of the plane object is determined in accordance with the Z value of each pixel written in the Z-buffer (col. 7, lines 9-56).

3. The storage medium according to claim 1, wherein

- the light source is a point light source (col. 12, lines 24-57 or col. 5, line 20), and
- the shadow volume generation step includes a step of determining a position of each vertex of the plane object with regard to a direction parallel to a surface thereof in accordance with the Z value of each pixel written in the Z-buffer (col. 12, lines 24-57). The parallel light is inherently disclosed by Matusmoto because multiple light sources arranged in a line is the equivalent of a parallel light source.

4. The storage medium according to claim 3, wherein

- a shape of the plane object is defined by a plurality of vertices, each having a different combination of an X-coordinate and a Z-coordinate (col. 7, lines 9-55), and

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- in the shadow volume generation step, the X-coordinate and the Z-coordinate of each vertex of the plane object are determined in accordance with the Z value of each pixel written in the Z buffer (col. 7, lines 9-55).

5. The storage medium according to claim 1, wherein the shadow volume generation program further causes the computer to execute the steps of:

- placing the shadow volume generated at the shadow volume generation step in the virtual space in a virtual manner so that a height direction of the shadow volume coincides with a direction of light emitted from the light source (col. 7, line 40 – col. 8, line 13), and
- rendering the shadow of the shadow casting object using the shadow volume placed in a virtual manner (col. 7, line 40 – col. 8, line 30).

Citations

The following prior art of record is not relied upon but is considered pertinent to applicant's disclosure: Voorhies et al. (US 5,704,024), Ashton (US 5,596,685), Naka et al. (US 5,577,175), Ashton (US 5,729,672), Foran et al. (US 5,742,749).

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Kim whose telephone number is 571-272-1691. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Hotaling can be reached on 571-272-4437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AK 6/7/2006


SCOTT JONES
PRIMARY EXAMINER